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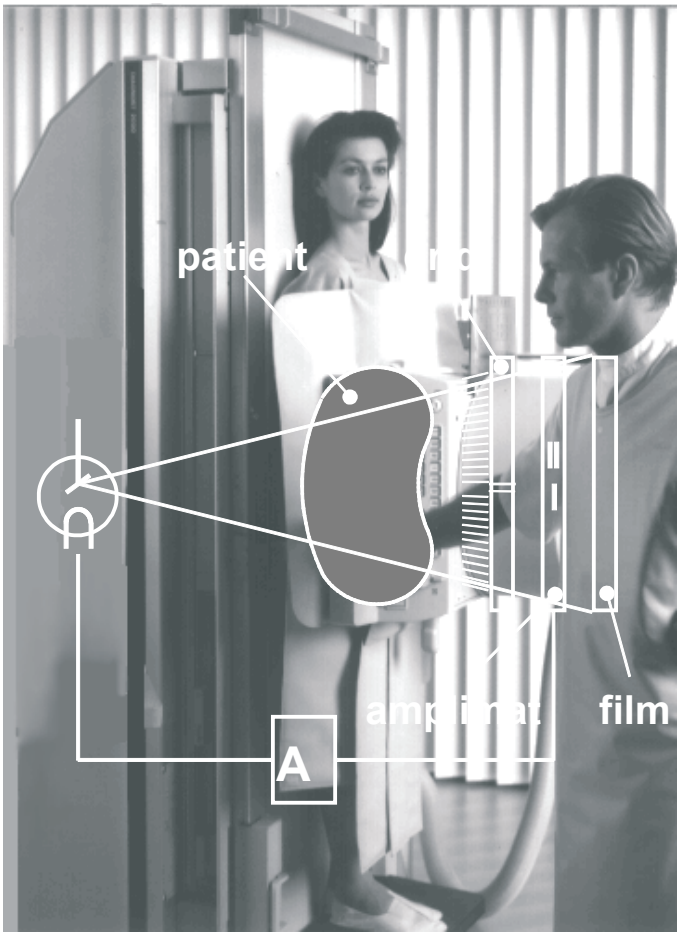
Films, Screens, Imaging Plates

Level 1 Documentation



> including Velara R/F programming <

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SERVICE MANUAL – UNIT

Films, Screens, Imaging Plates

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1. Introduction and range of application

This edition contains information about screens and films used for conventional radiography, and about storage phosphor imaging plates (IP) for computed radiography. Like the preceding editions, it does neither refer to dental radiography nor to mammography. This edition replaces edition 01.0 of this manual.

- It allows a general classification of screen-film systems (SFS) concerning their dose requirement.
- It supports the AMPLIMAT programming of kV-characteristics (SFS and IP) and basic density (SFS only) for the following types of high-voltage generators:
  - SUPER 50/80/100 CM
  - MAXIMUS 80/100/120 CM
  - MEDIO 30/50 CP
  - MEDIO 50/65 CP-H
  - SUPER 50/80/100 CP
  - OPTIMUS 50/65/80
  - VELARA R/F
- It provides information for the identification of reference values for tests of high contrast resolution according to the Imaging Performance Manual RAD (SFS only).
- It provides reference values for X-ray films concerning:
  - their characteristic properties
  - quality control of film processing (according to DIN V 6868-55).

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2. How to use this manual

2.1. General purposes

2.1.1. Speed classification

- Select the FILM in Table 3.1., look up the corresponding FACTOR (e.g. Agfa-Gevaert HT 1000 G Plus --> 1).
- Select the SCREEN in Table 3.2., look up the corresponding CLASS (e.g. Kodak Lanex Medium --> 200).
- Calculate for this screen-film system: CALCULATED SPEED CLASS = FACTOR x CLASS (e.g. 1 x 200 = 200).

NOTE

1. *This calculation of speed class is only a rough estimation which works under the condition that the film is adapted to the screen light color. Usually, the exact screen-film system speed S, as introduced in ISO 9236-1 and DIN 6867–1, cannot be determined by this simple calculation. As a consequence, the speed class SC of the screen-film system, as introduced in DIN 6867–10, differs slightly from the CALCULATED SPEED CLASS in some cases, mainly depending on film type, processing and medical application referred to.*
2. *If film, screen and cassette are products of the same company, dedicated manufacturer data may be available on site. Such information should be taken into account preferably.*
3. *For imaging plates used in computed radiography, no speed classification is possible (see notes at the end of 2.2.3.).*

2.2. Programming high-voltage generators

2.2.1. How to programme CM/CP generators

2.2.1.1. kV characteristics

- For screen-film radiography, select the SCREEN in Table 3.2. (e.g. Kodak Lanex Medium).
- For computed radiography, select the IMAGING PLATE in Table 3.3. (e.g. Fuji Imaging Plate HR).
- Look up the corresponding kV-characteristics by selecting CURVE (e.g. 9 [2]).
  You will find 2 numbers in this column. The first one should be preferred.

  Depending on the type of generator and the software release, curves 0 .. 6 or the improved curves 7 .. 12 can be programmed. The improved curves should be preferred. They are available in SCP Rel. ≥ 8.

2.2.1.2. Speed class of screen-film systems

- Select the FILM in Table 3.1., look up the corresponding FACTOR (e.g. Agfa-Gevaert HT 1000 G Plus --> 1).
- Select the SCREEN in Table 3.2., look up the corresponding CLASS (e.g. Kodak Lanex Medium --> 200).
- Calculate for this screen-film system: CALCULATED SPEED CLASS = FACTOR x CLASS (e.g. 1 x 200 = 200).

2.2.1.3. Dose step

In Table 3.4., look up the DOSE STEP, depending on the kV characteristics selected in 2.2.1.1., and on the speed class SC. For screen-film systems, use the CALCULATED SPEED CLASS determined according to 2.2.1.2. (e.g. CALCULATED SPEED CLASS = 200 and curve = 9 --> DOSE STEP = 19).

For imaging plates, use the intended image receptor dose range (see notes at the end of 2.2.3.). In order to maintain a sufficient signal-to-noise ratio, do not use DOSE STEPS corresponding to speed classes higher than 400 without consulting the responsible medical application department and the customer.

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This DOSE STEP represents a **basic value** for the initial programming of the AMPLIMAT.

Depending on:

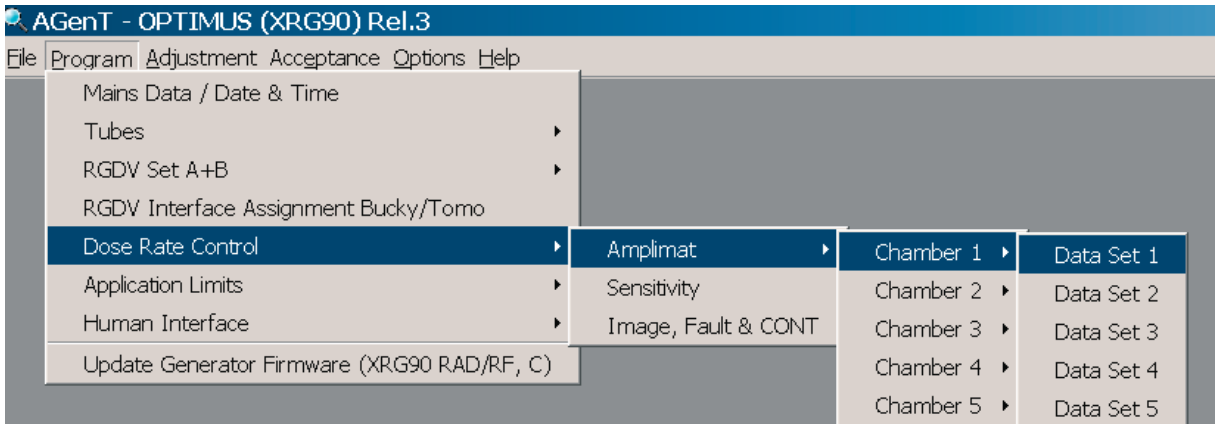
- the specific speed of the screen-film system
- the actual film processing conditions
- the customer's applicational requirements (e.g. preferred optical density or preferred noise level)
- dose regulations for computed radiography, issued by local administration

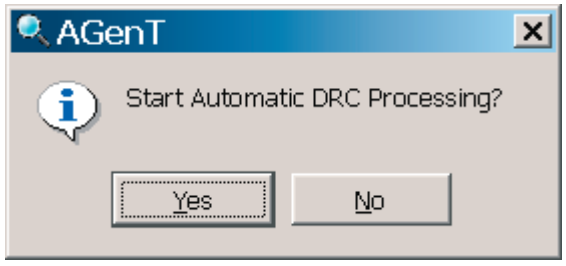
a modification ("fine tuning") of the basic dose step programming may become necessary.

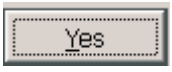
2.2.2. How to programme OPTIMUS generators

OPTIMUS generators are programmed via the AGenT software. Relevant data regarding kV-characteristics, speed classification and dose requirements are set automatically by selecting screens and films from data files. This manual may be helpful if the screen or film or imaging plate used by the customer is not in the OPTIMUS data files.

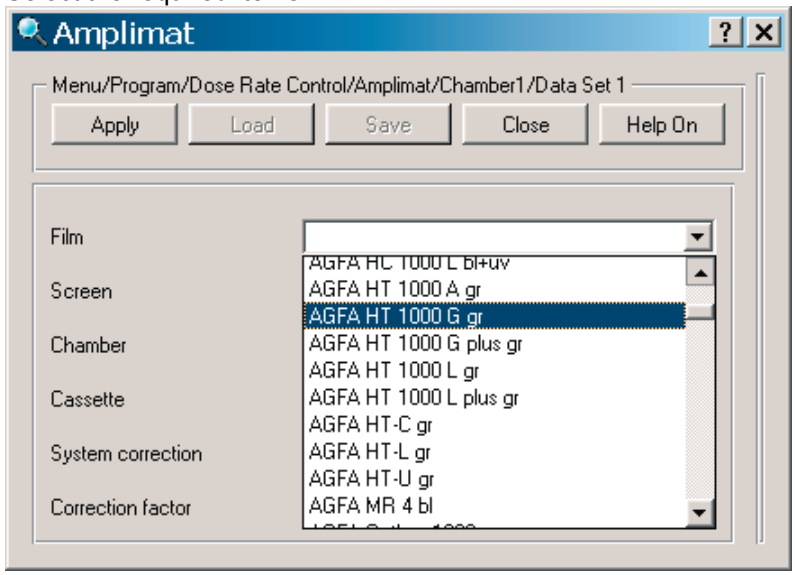
Select this path:





Click 

Select the required items:



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If the film type used by the customer is not in the menu then select an equivalent film type.
Use Table 3.1 to be sure that the COLOUR and the FACTOR are the same.

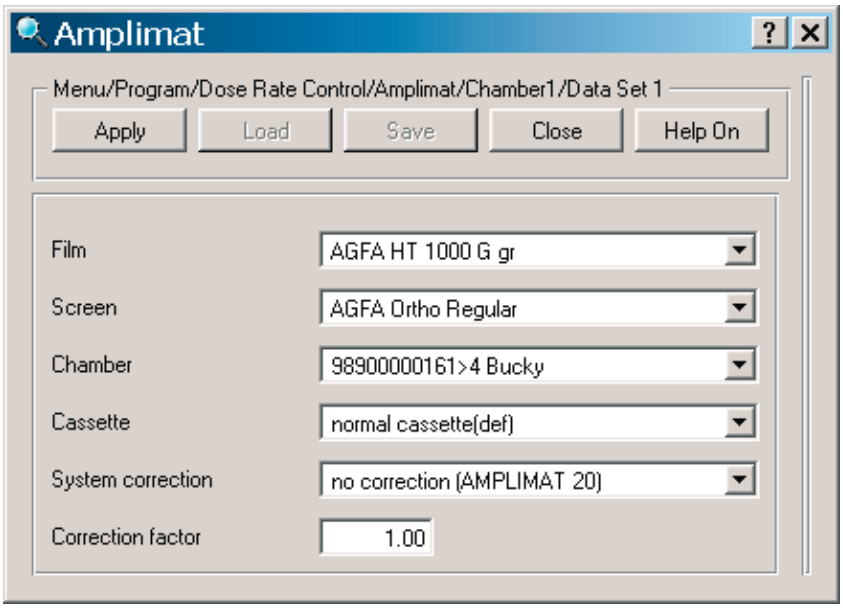
If the screen type used by the customer is not in the menu then select an equivalent screen type.
Use Table 3.2 to be sure that the COLOUR, the CLASS and the GROUP are the same.

For imaging plates, normally select IMAGING PLATE 200 or 400. For a sufficient signal-to-noise ratio, do not choose speed classes higher than 400 without consulting the responsible medical application department and the customer. Be sure to comply with local regulations.
Selecting IMAGING PLATE has the same effect as selecting IMAGING PLATE 200.

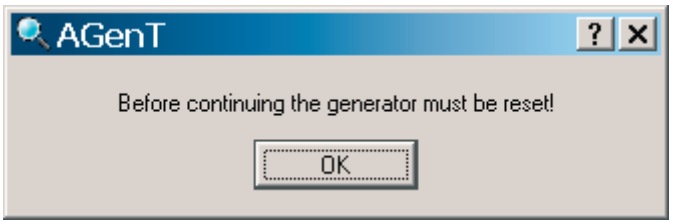
NOTE

If the type of screen, film or imaging plate is neither listed in the displayed menus nor in this brochure then contact Helpdesk or one of the addresses at the end of this manual for information.

When the data set is complete …



… then click



Reset the generator.

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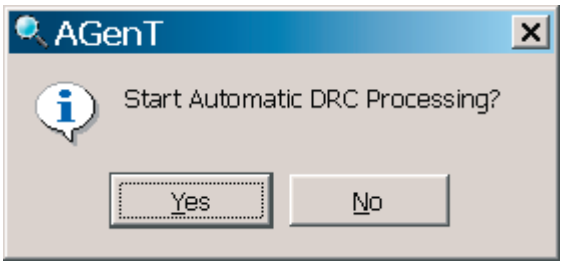
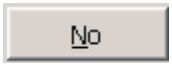
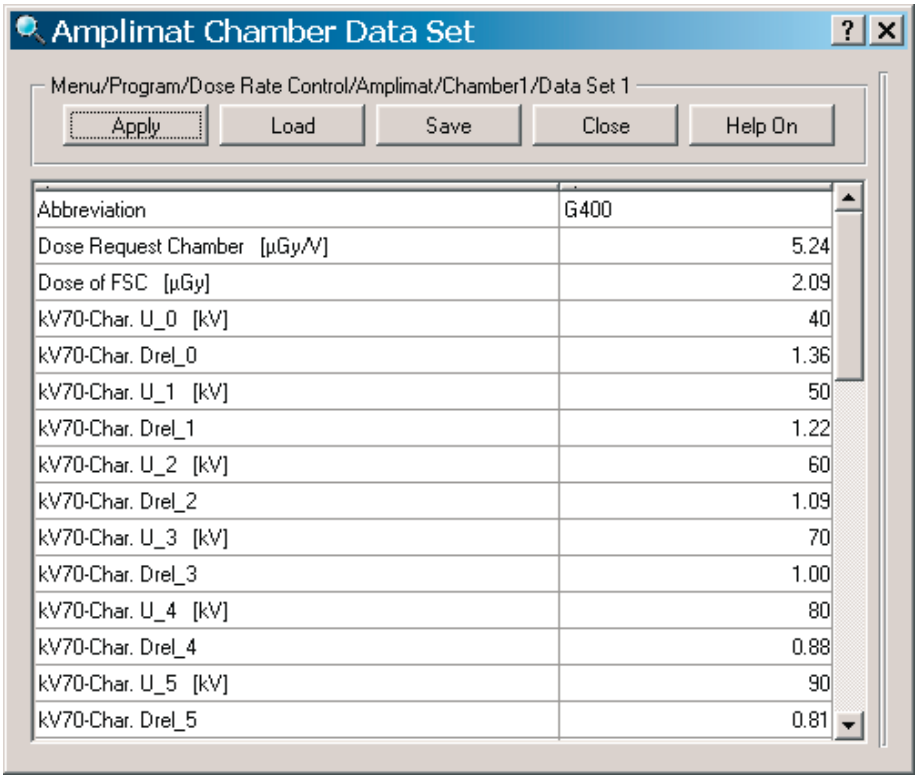
Select the same path again:



This time click 

Now you get access to the calculated default data set:



Abbreviation	G400
Dose Request Chamber [µGy/V]	5.24
Dose of FSC [µGy]	2.09
kV70-Char. U_0 [kV]	40
kV70-Char. Drel_0	1.36
kV70-Char. U_1 [kV]	50
kV70-Char. Drel_1	1.22
kV70-Char. U_2 [kV]	60
kV70-Char. Drel_2	1.09
kV70-Char. U_3 [kV]	70
kV70-Char. Drel_3	1.00
kV70-Char. U_4 [kV]	80
kV70-Char. Drel_4	0.88
kV70-Char. U_5 [kV]	90
kV70-Char. Drel_5	0.81

You may modify **Abbreviation** (1st line) or **Dose of FSC** (3rd line) if necessary.

CAUTION

Do not modify any one of the other values !

2.2.3. How to programme VELARA generators

VELARA generators are programmed via the AGenT software. Relevant data regarding kV-characteristics, speed classification and dose requirements are set automatically by selecting screens and films from data files.

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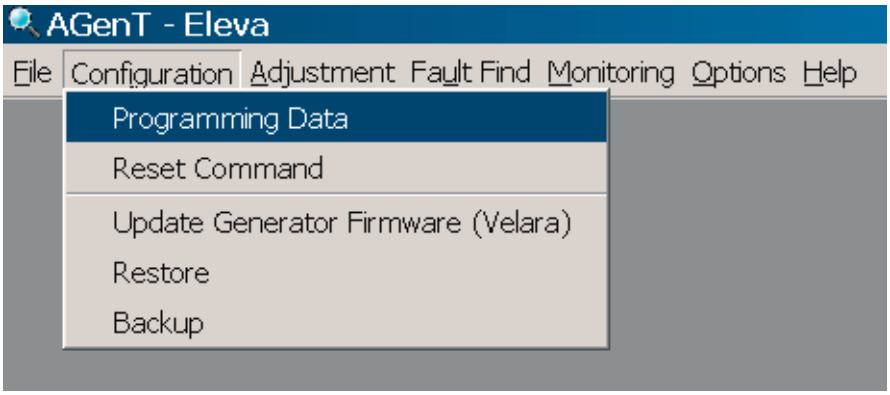
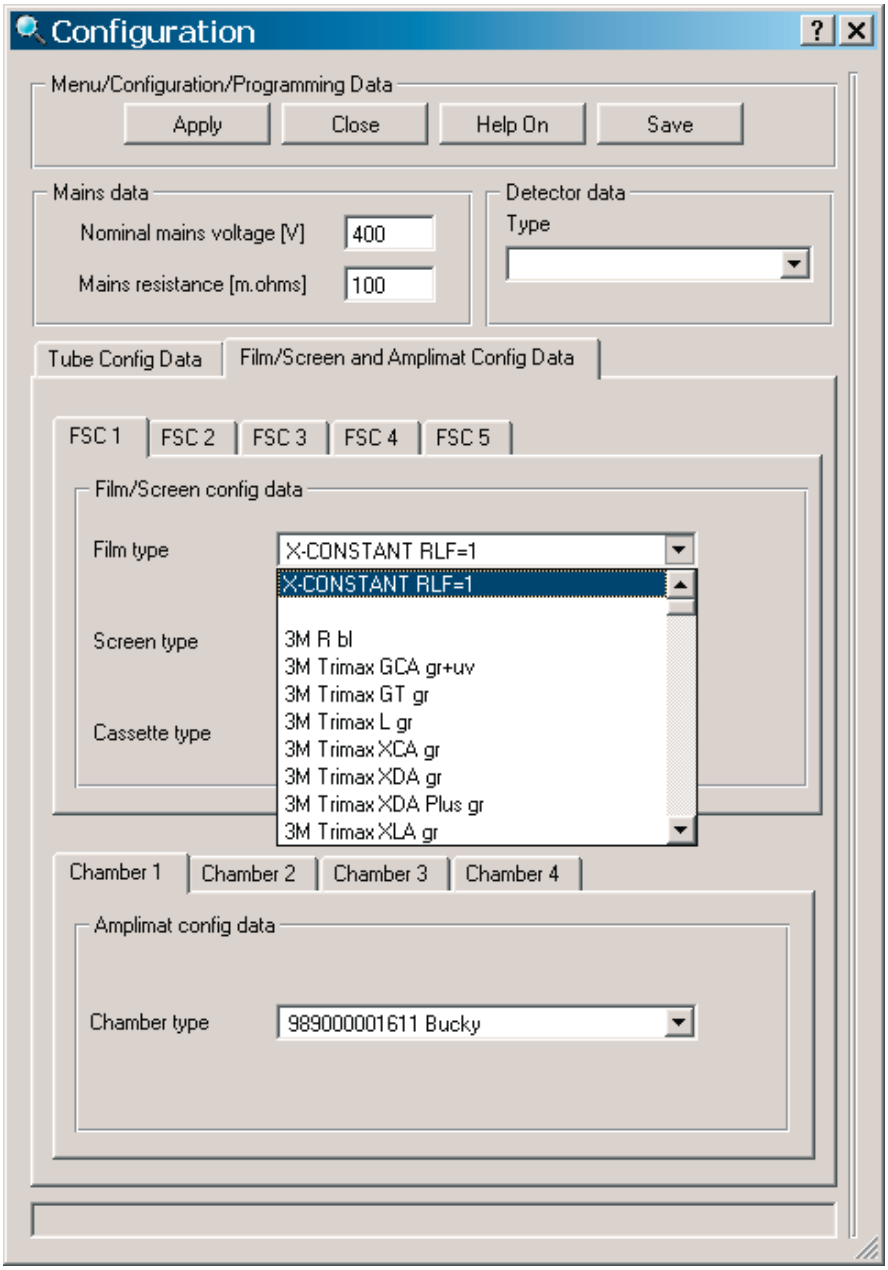
This manual may be helpful if the screen or film or imaging plate used by the customer is not in the VELARA data files. Connect the PC to the service port EZ-X200 and select:



Select the required items like film, screen, cassette, and chamber in the configuration screen:

There are a maximum of five FSC combinations and four different chambers programmable.



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If the film type used by the customer is not in the menu then select an equivalent film type.
Use Table 3.1 to be sure that the COLOUR and the FACTOR are the same.

If the screen type used by the customer is not in the menu then select an equivalent screen type.
Use Table 3.2 to be sure that the COLOUR, the CLASS and the GROUP are the same.

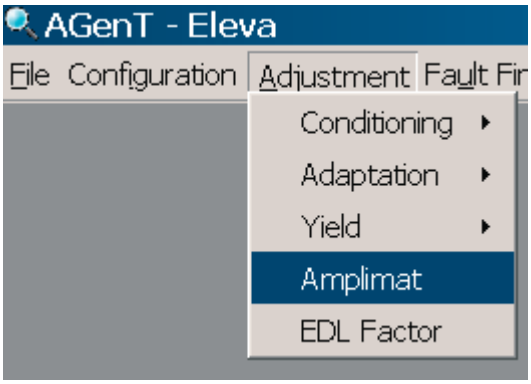
For imaging plates normally select IMAGING PLATE 200 or 400. For a sufficient signal-to-noise ratio, do not choose speed classes higher than 400 without consulting the responsible medical application department and the customer. Be sure to comply with local regulations.
Selecting IMAGING PLATE has the same effect as selecting IMAGING PLATE 200.

NOTE

If the type of screen, film or imaging plate is neither listed in the displayed menus nor in this brochure then contact Helpdesk or one of the addresses at the end of this manual for information.

When the data set is complete then click

Now select the following path for dose adjustment:



Carry out the following procedure for all FSCs used in the system (1....5).

Make a standard AEC exposure (see notes at the end of 2.2.3.).
Measure the optical density of the processed (developed) film.

Estimate the percentage of dose decrease or increase needed to obtain the requested optical density.
Write this number in the field "Value[%]".

Confirm the dose variation by clicking

Make another standard AEC exposure for test.
Repeat the procedure if necessary.

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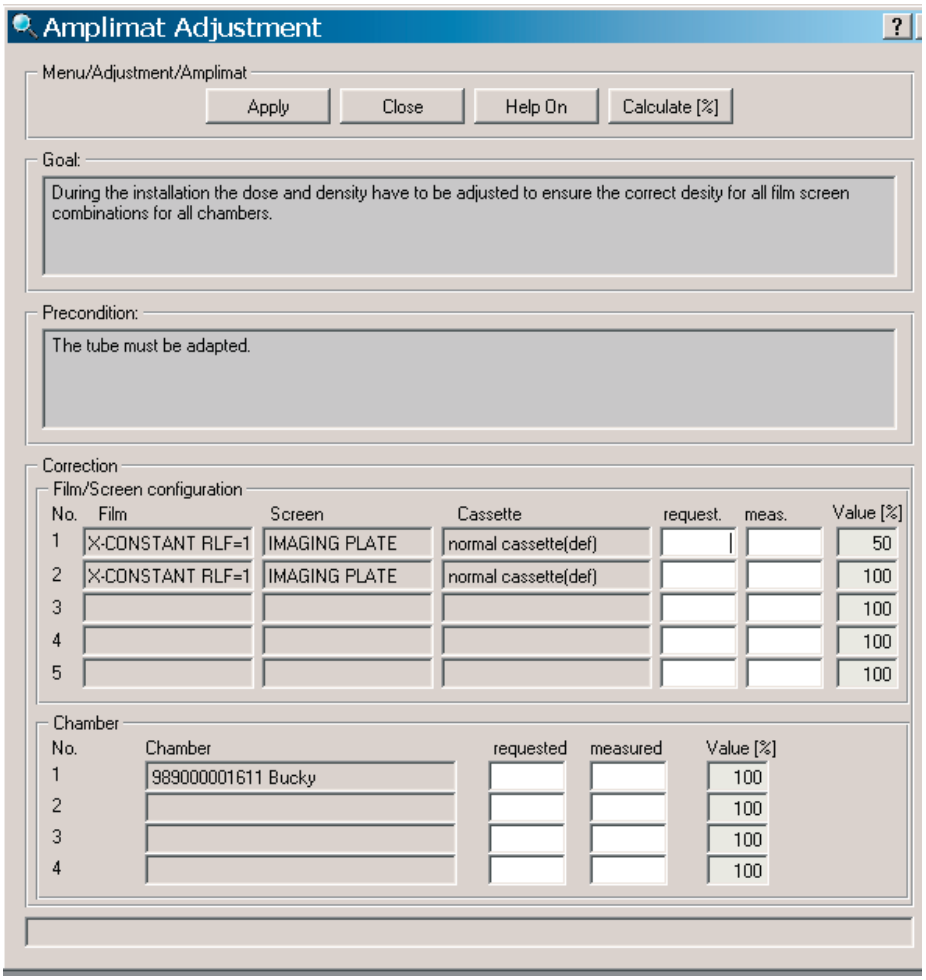

NOTE

1. For screen-film systems, the resulting optical density can be checked by a 70 kV automatic exposure with a water phantom of (16 ± 1) cm in most cases.
For screen-film systems especially designed for thorax radiography, the resulting optical density should be checked by a 120 kV automatic exposure with a water phantom of (12 ± 1) cm.
Please compare "4. Explanations: CLASS".

2. Contrary to screen-film radiography, computed radiography systems do not show any fixed relation between the image receptor dose and the optical density of the resulting film. Moreover, the exposure range of imaging plates used in computed radiography is very wide. Therefore, it is not possible to give speed numbers for this kind of image receptor. However, cassettes with imaging plates should not be exposed higher than screen-film cassettes for the same medical application, provided the configuration of the X-ray system is the same. This is even more evident when screen-film cassettes and imaging plate cassettes are used in parallel, or when imaging plate cassettes directly replace screen-film cassettes in a facility.

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3. Tables

3.1. Films for conventional radiography

FILM		COLOUR	FACTOR	$\overline{G}$	D_{min} (fr)	LE (fr	LK (fr)	Dmin (st)	LE (st)	LK (s)	REMARK
Agfa-Gevaert	Curix HT 1.000 G Plus	green	1	2,7	0,21	1,77	2,55	0,21	1,77	2,55	
Agfa-Gevaert	Curix HT 1.000 L Plus	green	1	2,0	0,20	1,74	2,22	0,20	1,74	2,22	
Agfa-Gevaert	Curix Opthos 1.000 H	green	1	2,0	0,21	1,89	2,45	0,21	1,89	2,45	
Agfa-Gevaert	Curix Opthos H	green	1								as Opthos 1.000 H
Agfa-Gevaert	Curix Ortho HT-G	green	1								sim. HT 1.000 G Pl.
Agfa-Gevaert	Curix Ortho HT-L Plus	green	1								sim. HT 1.000 L Pl.
Agfa-Gevaert	Ortho CP-G Plus	green	1								
Agfa-Gevaert	CP-GL	green	1								
Agfa-Gevaert	CP-GU	green	2								
Agfa-Gevaert	Curix Ultra UV-G	uv/blue	1	2,4	0,21	1,66	2,53	0,21	1,66	2,53	
Agfa-Gevaert	Curix Ultra UV-G Plus	uv/blue	1								
Agfa-Gevaert	Curix Ultra UV-L Plus	uv/blue	1								
Agfa-Gevaert	Curix Ultra UV-C	uv/blue	0,5	1,7	0,21	1,38	1,76	0,21	1,38	1,76	
Agfa-Gevaert	Cronex 5	blue	1		0,19	1,55	2,50		1,55	2,50	fm. DuPont/Sterling
Agfa-Gevaert	Cronex 10 T	blue	0,5		0,20	1,32	2,63		1,32	2,63	fm. DuPont/Sterling
Agfa-Gevaert	Cronex 10 TL	blue	0,5	1,9	0,22	1,24	1,93	0,22	1,24	1,93	fm. DuPont/Sterling
Agfa-Gevaert	Curix RP1	blue	1								
Agfa-Gevaert	Curix RP2 Plus	blue	1								
CEA	OGA	green	1			1,67	2,45				
CEA	OGA L	green	1			1,71	2,10				
CEA	OGA plus	green	1			1,67	2,45				
CEA	Docuscreen - G	green	1			1,71	2,51				
CEA	Docuscreen - L	green	1			1,70	2,03				
CEA	MRB	green	0,5			1,60	2,85				monitor
CEA	RP NEW	blue	1			1,56	2,70				
FCW	x-ray Retina XOD	green	1	2,9		1,66	2,61				Kodak related
FCW	x-ray Retina XBD	blue	1	2,8		1,41	2,41				Kodak related
Ferrania	LifeRay XDA Plus UTLG	green	1								formerly 3M/Imation
Ferrania	LifeRay XDA Plus	green	1								formerly 3M/Imation
Ferrania	LifeRay XDA	green	1								formerly 3M/Imation
Ferrania	LifeRay XLA Plus	green	1								formerly 3M/Imation
Ferrania	LifeRay XCG new	green	1								formerly 3M/Imation
Ferrania	LifeRay XCG	green	1								formerly 3M/Imation
Ferrania	LifeRay XM	green	1								formerly 3M/Imation
Ferrania	LifeRay GCA	uv+green	D.n.u.								formerly 3M/Imation
Ferrania	LifeRay R	uv/blue	1								formerly 3M/Imation
Fuji	Super HR-A30	green	1	3,2	0,19	1,59	2,53				
Fuji	Super HR-E30	green	1	3,0	0,19	1,60	2,42				
Fuji	Super HR-L30	green	1	2,6	0,20	1,61	1,93				

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FILM		COLOUR	FACTOR	$\bar{G}$	D_{min} (fr)	LE (fr	LK (fr)	Dmin (st)	LE (st)	LK (s)	REMARK
Fuji	Super HR-C30	green	1	1,9	0,20	1,77	1,84				
Fuji	HR-T30	green	1								
Fuji	HR-HA30	green	2								
Fuji	MI-NP	green	0,5	2,7	0,18	1,47	2,51				monitor
Fuji	UR-1 (AD system)	green	D.n.u.	2,3	0,17	1,35	2,04				thorax
Fuji	Super RX	blue	1		0,21	1,49	2,25				
Fuji	RX-U	blue	0,5								
IBF	Medix RXG	green	1								
IBF	Medix RXB	blue	1								
IBF	Medix MSF	blue	0,5								
Kodak	InSight (HC) Thoracic	green	D.n.u.		0,22	1,91 dbs.	1,95 dbs.	0,22	1,94 dbs.	2,30 dbs.	thorax; X-Omat
Kodak	InSight (HC) Thoracic	green	D.n.u.		0,22	1,91 dbs.	2,37 dbs.	0,22	1,91 dbs.	2,30 dbs.	RP X-Omat EX II
Kodak	InSight VHC Thoracic	green	D.n.u.	2,5	0,22	1,74 dbs.	2,19 dbs.	0,22	1,74 dbs.	2,35 dbs.	thorax; X-Omat
Kodak	InSight VHC Thoracic	green	D.n.u.	2,5	0,22	1,75 dbs.	2,35 dbs.	0,22	1,75 dbs.	2,37 dbs.	RP X-Omat EX II
Kodak	InSight Pediatric	green	0,5	2,3	0,22	1,61 dbs.	2,52 dbs.	0,22	1,64 dbs.	2,67 dbs.	inf. thorax; X-Omat
Kodak	InSight Pediatric	green	0,5	2,3	0,22	1,63 dbs.	2,62 dbs.	0,22	1,63 dbs.	2,74 dbs.	RP X-Omat EX II
Kodak	InSight Skeletal	green	1	2,9	0,22	2,01 dbs.	3,02 dbs.	0,22	1,99 dbs.	3,07 dbs.	RP X-Omat
Kodak	InSight Skeletal	green	1	2,9	0,22	1,98 dbs.	3,10 dbs.	0,22	1,99 dbs.	3,08 dbs.	X-Omat LE Plus
Kodak	InSight Skeletal	green	1	2,9	0,22	1,99 dbs.	3,26 dbs.	0,22	1,99 dbs.	3,28 dbs.	RP X-Omat EX II
Kodak	Medical X-ray G (MXG+)	green	1	2,9		1,66	2,61				sim. T-Mat (Plus) G
Kodak	Medical X-ray GL (MXGL)	green	1								sim. T-Mat (Plus) L
Kodak	T-Mat Plus G	green	1	2,7	0,20	1,72	2,70	0,21	1,74	2,75	RP X-Omat
Kodak	T-Mat Plus G	green	1	2,7	0,20	1,74	2,78	0,21	1,74	2,82	X-Omat LE Plus
Kodak	T-Mat Plus G	green	1	2,7	0,20	1,74	2,78	0,21	1,74	2,82	RP X-Omat EX II
Kodak	T-Mat G / RA	green	1								rapid access 45 s
Kodak	T-Mat H / RA	green	2								rapid access 45 s
Kodak	T-Mat L / RA	green	1								rapid access 45 s
Kodak	T-Mat S / RA	green	1		0,18						rapid access 45 s
Kodak	X-Sight G / RA	green	1	2,9	0,22	2,03 dbs.	3,05 dbs.	0,22	2,01 dbs.	3,10 dbs.	RP X-Omat
Kodak	X-Sight G / RA	green	1	2,9	0,22	1,99 dbs.	3,05 dbs.	0,22	1,97 dbs.	3,10 dbs.	X-Omat LE Plus
Kodak	X-Sight G / RA	green	1	2,9	0,22	2,03 dbs.	3,24 dbs.	0,22	2,01 dbs.	3,30 dbs.	RP X-Omat EX II
Kodak	X-Sight L / RA	green	1	2,3	0,21	1,98 dbs.	2,27 dbs.	0,21	1,96 dbs.	2,37 dbs.	RP X-Omat
Kodak	X-Sight L / RA	green	1	2,3	0,21	1,97 dbs.	2,35 dbs.	0,21	1,98 dbs.	2,57 dbs.	RP X-Omat EX II
Kodak	Hyper Speed G Medical	green	2								
Kodak	Medical X-ray B (MXB)	blue	1	2,8		1,41	2,41				sim. X-Omat UV
Kodak	X-Omat BT	blue	1								
Kodak	X-Omat HBT	blue	0,5								
Kodak	X-Omat JB	blue									
Kodak	X-Omat UV	blue/uv	1	3,0	0,19	1,49	2,55	0,20	1,55/ 1,65*	2,52	RP X-Omat
Kodak	X-Omat UV	blue/uv	1	3,0	0,19	1,43	2,58	0,20	1,50/ 1,60*	2,55	RP X-Omat EX II
Kodak	X-Omat UV+	blue/uv	1								
Konica	MGX-SR	green	1								Konica Minolta

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FILM		COLOUR	FACTOR	$\bar{G}$	D_{min} (fr)	LE (fr	LK (fr)	Dmin (st)	LE (st)	LK (s)	REMARK
Konica	MG-SR	green	1								Konica Minolta
Konica	MGT-SR	green	1								Konica Minolta
Konica	MGL-SR	green	1								Konica Minolta
Konica	MGV-SR	green	2								Konica Minolta
Konica	PPG	green	1								Konica Minolta
Konica	SR-H	green	1	3,1	0,21	1,73	2,61				Konica Minolta
Konica	SR-HG	green	1	2,9	0,18	1,79	2,51				Konica Minolta
Konica	SR-G	green	1	2,6	0,20	1,61	2,05				Konica Minolta
Konica	SR-C	green	1	2,0	0,21	1,63	1,82				Konica Minolta
Konica	HB	blue	0,5								Konica Minolta
Konica	PPB	blue	1								Konica Minolta
Konica	PB7	blue	0,5								Konica Minolta
Konica	A 3	blue	1	2,7	0,19	1,41	2,74				Konica Minolta
Lake Superior	LSX-G	green	1								Agfa related
Lake Superior	LSX-B	blue	1								Agfa related
Lake Superior	LSX-M	blue	0,5								Agfa related
Medlink	ML-G	green	1								
Medlink	ML-L	green	1								
Medlink	ML-HG	green	2								
Medlink	ML-B	blue	1								
Medlink	ML-HS	blue	0,5								
RMXC Intex	XOG	green	1								
RMXC Intex	XOGL	green	1								
RMXC Intex	XRP	blue	1								
RMXC Intex	HSP	blue	0,5								
Typon	Typox TXR-O II	green	1			1,62	2,44				
Typon	Typox TX-OL	green	1			1,62	2,23				
Typon	Typox TX-MFO II	green	0,5								monitor
Typon	Typox TX-RP	uv/blue	1			1,30	2,90				
Valmex	VA 990 G-T	green	1	2,9					1,73	2,45	
Valmex	VA 990 G-L	green	1	2,9					1,74	2,80	
Valmex	SH-555	green	1	2,9					1,73	2,45	like VA 990 G-T
Valmex	SH-555 L	green	1	2,4					1,74	2,33	
Valmex	711 B	blue	1	2,9					1,55	2,60	
Valmex	HP 441	blue	1	2,9					1,55	2,60	like 711 B

Table 3.1.

Footnotes:

- FILM: Film types may be mentioned twice for the following reasons:

  a) Technical data are given for two different ways of film processing.

  b) The film has two different emulsions. Then values for LE and LK are stated in two ways:
  - x/y = value for front emulsion (x) / value for back emulsion (y)
  - x dbs. = double sided, value for light exposure from both sides, one after the other.

  For details ask the respective film company for an information leaflet.

- D.n.u.: Declaration not useful. For films which are part of a closed screen-film system, declaration of a FACTOR is not useful. Moreover, for films which belong to a closed screen-film system for radiography of the thorax, declaration of an average gradient is of very limited value, owing to special properties of thorax images.
- LE: Values with an asterisk (*) apply if the film is blue / uv sensitive but the film processor is mainly used for green sensitive films.

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3.2. Screens for conventional radiography

SCREEN		COLOUR	CLASS	GROUP	CURVE	RESOLUTION	IN MARKET	REMARK
Agfa-Gevaert	Curix Ortho Fine	green	100	LG 1	9 (2)	AG 1	yes	
Agfa-Gevaert	Curix Ortho Medium	green	200	LG 1	9 (2)	AG 1	yes	
Agfa-Gevaert	Curix Ortho Regular	green	400	LG 1	9 (2)	AG 1	yes	
Agfa-Gevaert	Curix Ortho Fast	green	400	LG 1	9 (2)	AG 1	yes	
Agfa-Gevaert	Curix Ortho Gradual	green	100-400	LG 1	9 (2)	AG 1	yes	
Agfa-Gevaert	CP-G 100	green	100	LG 1	9 (2)	AG 1	no	similar Ortho Fine
Agfa-Gevaert	CP-G 200	green	200	LG 1	9 (2)	AG 1	no	similar Ortho Med.
Agfa-Gevaert	CP-G 400	green	400	LG 1	9 (2)	AG 1	no	similar Ortho Reg.
Agfa-Gevaert	Curix Opthos D	green	200	LG 1	9 (2)	AG 1	no	until ' 99; film: Ophtos 1.000
Agfa-Gevaert	Curix Opthos M	green	400	LG 1	9 (2)	AG 1	no	until ' 99; film: Ophtos 1.000
Agfa-Gevaert	Curix Opthos H	green	400	LG 1	9 (2)	AG 1	yes	thorax; film: Ophtos 1.000 H
Agfa-Gevaert	Curix Fin	blue	50	LG 4	7 (0)	AG 2	no	
Agfa-Gevaert	Curix Universal	blue	100	LG 4	7 (0)	AG 2	no	
Agfa-Gevaert	Curix Spezial	blue	200	LG 4	7 (0)	AG 2	no	
Agfa-Gevaert	Curix Gradual	blue	100-200	LG 4	7 (0)	AG 2	no	
Agfa-Gevaert	Curix Blue C1	blue	100	LG 4	7 (0)	AG 2	no	
Agfa-Gevaert	Curix Blue C2	blue	200	LG 4	7 (0)	AG 2	no	
Agfa-Gevaert	CP-B 100	blue	100	LG 4	7 (0)	AG 2	yes	
Agfa-Gevaert	CP-B 200	blue	200	LG 4	7 (0)	AG 2	yes	
Agfa-Gevaert	CP-B 400	blue/uv	400	LG 5	7 (0)	AG 1	yes	
Agfa-Gevaert	CP-B 800	uv/blue	800	LG 5	7 (0)	AG 1	yes	
Agfa-Gevaert	Curix MR 200	blue	200	LG 4	7 (0)	AG 2	no	
Agfa-Gevaert	Curix Blue F1	violet	100	LG 5	7 (0)	AG 3	no	until 1994
Agfa-Gevaert	Curix Blue M2	violet	200	LG 5	7 (0)	AG 3	no	until 1994
Agfa-Gevaert	Curix Blue R4	violet	400	LG 5	7 (0)	AG 3	no	until 1994
Agfa-Gevaert	Curix Blue U8	violet	800	LG 5	7 (0)	AG 3	yes	
Agfa-Gevaert	Curix Blue VAR (old)	violet	200-400	LG 5	7 (0)	AG 3	no	until 1994
Agfa-Gevaert	Curix Blue 200 (200 HC)	uv/blue	200	LG 5	7 (0)	AG 1	no	
Agfa-Gevaert	Curix Blue 400 (400 HC)	uv/blue	400	LG 5	7 (0)	AG 1	no	
Agfa-Gevaert	Curix Blue 800 (800 HC)	uv/blue	800	LG 5	7 (0)	AG 1	yes	
Agfa-Gevaert	Curix Blue VAR	uv/blue	200-800	LG 5	7 (0)	AG 1	no	1995 - 1999
Agfa-Gevaert	Curix MR 800	violet	800	LG 6	11 (5)	AG 1	no	
Agfa-Gevaert	Curix MR 50	blue	50	LG 6	11 (5)	AG 1	no	
Agfa-Gevaert	Curix MR 100	blue	100	LG 6	11 (5)	AG 1	no	
Agfa-Gevaert	Curix MR 200	blue	200	LG 6	11 (5)	AG 1	no	until 1984
Agfa-Gevaert	Curix MR 400	blue	400	LG 6	11 (5)	AG 1	no	until 1984
Agfa-Gevaert	Curix MR 600	blue	400	LG 6	11 (5)	AG 1	no	
Agfa-Gevaert	Curix MR Gradual	blue	200-400	LG 6	11 (5)	AG 1	no	
Agfa-Gevaert	Curix MR 400	blue	400	LG 6	11 (5)	AG 1	no	
Agfa-Gevaert	Ultra Detail	ultraviolet	100	LG 5	7 (0)	AG 3	yes	fm. DuPont/Sterling
Agfa-Gevaert	Ultra Fast Detail	ultraviolet	200	LG 5	7 (0)	AG 3	yes	fm. DuPont/Sterling
Agfa-Gevaert	Ultra Rapid	ultraviolet	400	LG 5	7 (0)	AG 3	yes	fm. DuPont/Sterling
Agfa-Gevaert	Ultra Super Rapid	ultraviolet	800	LG 5	7 (0)	AG 3	yes	fm. DuPont/Sterling
Agfa-Gevaert	Quanta Detail	blue/uv	100	LG 5	7 (0)	AG 3	no	fm. DuPont/Sterling
Agfa-Gevaert	Quanta Fast Detail	violet	400	LG 5	7 (0)	AG 3	no	fm. DuPont/Sterling

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SCREEN		COLOUR	CLASS	GROUP	CURVE	RESOLUTION	IN MARKET	REMARK
Agfa-Gevaert	Quanta Super Rapid	blue	800	LG 6	11 (5)	AG 1	no	fm. DuPont/Sterling
Agfa-Gevaert	Quanta Rapid	violet	800	LG 6	11 (5)	AG 1	no	fm. DuPont/Sterling
CAWO	OG 2	green	100	LG 1	9 (2)	AG 1	yes	
CAWO	OG 4	green	200	LG 1	9 (2)	AG 1	yes	
CAWO	OG 8	green	400	LG 1	9 (2)	AG 1	yes	
CAWO	OG 16	green	800	LG 1	9 (2)	AG 1	yes	
CAWO	OG Gradual + -	green	100-400	LG 1	9 (2)	AG 1	yes	
CAWO	OG Gradual + - +	green	200-400	LG 1	9 (2)	AG 1	yes	
CAWO	Fin	blue	50	LG 4	7 (0)	AG 2	no	
CAWO	Universal	blue	100	LG 4	7 (0)	AG 2	yes	
CAWO	Rapid	blue	200	LG 4	7 (0)	AG 2	no	
CAWO	Special	blue	200	LG 4	7 (0)	AG 2	yes	
CAWO	Gradual + -	blue	100-200	LG 4	7 (0)	AG 2	yes	
CAWO	Gradual + - +	blue	100-200	LG 4	7 (0)	AG 2	yes	
CAWO	SE 2	blue/uv	200	LG 5	7 (0)	AG 1	yes	since 1995
CAWO	SE 4	blue/uv	400	LG 5	7 (0)	AG 1	yes	since 1995
CAWO	SE 8	uv/blue	800	LG 5	7 (0)	AG 1	yes	since 1995
CAWO	SE Gradual + -	uv/blue	200-800	LG 5	7 (0)	AG 1	yes	
CAWO	SE Gradual + - +	uv/blue	200-800	LG 5	7 (0)	AG 1	yes	
CAWO	SE 1 (2nd generation)	violet	100	LG 5	7 (0)	AG 3	no	until 1994
CAWO	SE 2 (2nd generation)	violet	200	LG 5	7 (0)	AG 3	no	until 1994
CAWO	SE 4 (2nd generation)	violet	400	LG 5	7 (0)	AG 3	no	until 1994
CAWO	SE 8 (2nd generation)	violet	800	LG 5	7 (0)	AG 3	no	until 1994
CAWO	SE Gradual (2nd gener.)	violet	200-400	LG 5	7 (0)	AG 3	no	until 1994
CEA	G Fine	green	100	LG 1	9 (2)	AG 1	no	Agfa-Gevaert related
CEA	G Medium	green	200	LG 1	9 (2)	AG 1	no	Agfa-Gevaert related
CEA	G Regular	green	400	LG 1	9 (2)	AG 1	no	Agfa-Gevaert related
CEA	G Fast	green	400	LG 1	9 (2)	AG 1	no	Agfa-Gevaert related
CEA	G Diff (gradual)	green		LG 1	9 (2)	AG 1	no	Agfa-Gevaert related
CEA	Wicor OG 100	green	100	LG 1	9 (2)	AG 1	no	
CEA	Wicor OG 200	green	200	LG 1	9 (2)	AG 1	no	
CEA	Wicor OG 400	green	400	LG 1	9 (2)	AG 1	no	
CEA	Wicor OG 600	green	400	LG 1	9 (2)	AG 1	no	
CEA	Wicor OG DIF	green	100-400	LG 1	9 (2)	AG 1	no	
CEA	Wicor LG 100	green	100	LG 1	9 (2)	AG 1	no	
CEA	Wicor MG 200	green	200	LG 1	9 (2)	AG 1	no	
CEA	Wicor HG 400	green	400	LG 1	9 (2)	AG 1	no	
CEA	G 100	green	100	LG 1	9 (2)	AG 1	yes	Agfa-Gevaert rel.
CEA	G 200	green	200	LG 1	9 (2)	AG 1	yes	Agfa-Gevaert rel.
CEA	G 400	green	400	LG 1	9 (2)	AG 1	yes	Agfa-Gevaert rel.
CEA	B Detail	blue	100	LG 4	7 (0)	AG 2	no	
CEA	B Par	blue	100	LG 4	7 (0)	AG 2	no	
CEA	B High Plus	blue	200	LG 4	7 (0)	AG 2	no	
CEA	B 100	blue	100	LG 6	11 (5)	AG 1	no	Agfa-Gevaert rel.
CEA	B 200	blue	200	LG 6	11 (5)	AG 1	no	Agfa-Gevaert rel.
CEA	B 400	blue	400	LG 6	11 (5)	AG 1	no	Agfa-Gevaert rel.
CEA	B 600	blue	400	LG 6	11 (5)	AG 1	no	Agfa-Gevaert rel.
CEA	B 800	blue	800	LG 6	11 (5)	AG 1	no	Agfa-Gevaert rel.
CEA	B Diff (gradual)	blue		LG 6	11 (5)	AG 1	no	Agfa-Gevaert rel.

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SCREEN		COLOUR	CLASS	GROUP	CURVE	RESOLUTION	IN MARKET	REMARK
CEA	Wicor RP 100	blue	100	LG 6	11 (5)	AG 1	no	
CEA	Wicor RP 200	blue	200	LG 6	11 (5)	AG 1	no	
CEA	Wicor RP 400	blue	400	LG 6	11 (5)	AG 1	no	
CEA	Wicor RP DIF	blue	100-400	LG 6	11 (5)	AG 1	no	
CEA	Wicor RP 700	blue	800	LG 6	11 (5)	AG 1	no	
CEA	B 100	blue	100	LG 4	7 (0)	AG 2	yes	Agfa-Gevaert rel.
CEA	B 200	blue	200	LG 4	7 (0)	AG 2	yes	Agfa-Gevaert rel.
CEA	B 400	uv/blue	400	LG 5	7 (0)	AG 1	yes	
Ferrania	LifeRay Green Fine	green	100	LG 1	9 (2)	AG 1	yes	formerly 3M/Imation
Ferrania	LifeRay Green Fast Det.	green	200	LG 1	9 (2)	AG 1	yes	formerly 3M/Imation
Ferrania	LifeRay Green Medium	green	200	LG 1	9 (2)	AG 1	yes	formerly 3M/Imation
Ferrania	LifeRay Green Regular	green	400	LG 1	9 (2)	AG 1	yes	formerly 3M/Imation
Ferrania	LifeRay Green Fast	green	400	LG 1	9 (2)	AG 1	yes	formerly 3M/Imation
Ferrania	LifeRay Green Gradual	green	100-400	LG 1	9 (2)	AG 1	yes	formerly 3M/Imation
Ferrania	LifeRay Blue Fast Det.	ultraviolet	200	LG 5	7 (0)	AG 3	yes	formerly 3M/Imation
Ferrania	LifeRay Blue Regular	ultraviolet	400	LG 5	7 (0)	AG 3	yes	formerly 3M/Imation
Ferrania	'Chest system' for GCA	uv + green	400	LG 1	9 (2)	AG 1	yes	thorax
Fuji	Grenex G-3	green	100	LG 1	9 (2)	AG 1	no	
Fuji	Grenex G-4	green	200	LG 1	9 (2)	AG 1	no	
Fuji	Grenex G-8	green	400	LG 1	9 (2)	AG 1	no	
Fuji	Grenex G-12	green	800	LG 1	9 (2)	AG 1	no	
Fuji	FG-3	green	100	LG 1	9 (2)	AG 1	no	
Fuji	FG-4	green	200	LG 1	9 (2)	AG 1	no	
Fuji	FG-6	green	400	LG 1	9 (2)	AG 1	no	
Fuji	FG-8	green	400	LG 1	9 (2)	AG 1	no	
Fuji	FG-12	green	800	LG 1	9 (2)	AG 1	no	
Fuji	FG-3-8 Gradient	green	100-400	LG 1	9 (2)	AG 1	no	
Fuji	FG-4-12 Gradient	green	200-800	LG 1	9 (2)	AG 1	no	
Fuji	HR-Fine	green	100	LG 1	9 (2)	AG 1	yes	
Fuji	HR-Medium	green	200	LG 1	9 (2)	AG 1	yes	
Fuji	HR-Medium Plus	green	400	LG 1	9 (2)	AG 1	no	
Fuji	HR-Regular	green	400	LG 1	9 (2)	AG 1	yes	
Fuji	HR-Fast	green	400	LG 1	9 (2)	AG 1	yes	
Fuji	HR-Ultra Fast	green	800	LG 1	9 (2)	AG 1	yes	
Fuji	HR-Gradient 200-600	green	200-400	LG 1	9 (2)	AG 1	yes	
Fuji	HG-M (AD system)	green	200	LG 1	9 (2)	AG 1	yes	thorax
Fuji	HG-R (AD system)	green	400	LG 1	9 (2)	AG 1	yes	thorax
Fuji	FS	blue	50	LG 4	7 (0)	AG 2	no	
Fuji	MS	blue	100	LG 4	7 (0)	AG 2	no	
Fuji	HS	blue	200	LG 4	7 (0)	AG 2	no	
Fuji	Super HS	blue	200	LG 4	7 (0)	AG 2	no	
Goos	LGG Super Detail	green	50	LG 1	9 (2)	AG 1	no	
Goos	LGG Detail	green	100	LG 1	9 (2)	AG 1	no	
Goos	LGG Medium	green	200	LG 1	9 (2)	AG 1	no	
Goos	LGG HS	green	400	LG 1	9 (2)	AG 1	no	
Goos	LGG 200	green	200	LG 1	9 (2)	AG 1	yes	
Goos	LGG 400	green	400	LG 1	9 (2)	AG 1	yes	
Goos	LGG 800	green	800	LG 1	9 (2)	AG 1	yes	

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SCREEN		COLOUR	CLASS	GROUP	CURVE	RESOLUTION	IN MARKET	REMARK
Goos	LGG Differential +	green	100-400	LG 1	9 (2)	AG 1	yes	
Goos	LGG Plus-Minus-Plus	green	100-400	LG 1	9 (2)	AG 1	yes	
Goos	Suprema LGY UD	blue/green	50	LG 3	4 (4)	AG 1	no	
Goos	Suprema LGY D	blue/green	100	LG 3	4 (4)	AG 1	no	
Goos	Suprema LGY Medium	blue/green	200	LG 3	4 (4)	AG 1	no	formerly LGY U
Goos	Suprema LGY 400	blue/green	400	LG 3	4 (4)	AG 1	no	formerly LGY HS
Goos	LGY 200	blue/green	200	LG 3	4 (4)	AG 1	yes	
Goos	LGY 400	blue/green	400	LG 3	4 (4)	AG 1	yes	
Goos	LGY Differential +	blue/green	100-400	LG 3	4 (4)	AG 1	no	
Goos	LGY Plus-Minus-Plus	blue/green	100-400	LG 3	4 (4)	AG 1	no	
Goos	Ultra Detail	blue	50	LG 4	7 (0)	AG 2	no	
Goos	Universal	blue	100	LG 4	7 (0)	AG 2	no	
Goos	Spezial	blue	200	LG 4	7 (0)	AG 2	no	
Goos	Rapid	blue	200	LG 4	7 (0)	AG 2	no	
Goos	Ultra Rapid	blue	200	LG 4	7 (0)	AG 2	no	
Goos	Differential	blue	50-100	LG 4	7 (0)	AG 2	no	
Goos	Differential Spezial	blue	100-200	LG 4	7 (0)	AG 2	no	
Imation	Trimax 1	green	50	LG 1	9 (2)	AG 1	no	
Imation	Trimax 2	green	100	LG 1	9 (2)	AG 1	no	
Imation	Trimax4	green	200	LG 1	9 (2)	AG 1	no	
Imation	Trimax 6	green	200	LG 1	9 (2)	AG 1	no	
Imation	Trimax 8	green	400	LG 1	9 (2)	AG 1	no	
Imation	Trimax 16	green	800	LG 1	9 (2)	AG 1	no	
Imation	Trimax Fine	green	100	LG 1	9 (2)	AG 1	no	
Imation	Trimax Fast Detail	green	200	LG 1	9 (2)	AG 1	no	
Imation	Trimax Medium	green	200	LG 1	9 (2)	AG 1	no	
Imation	Trimax Regular	green	400	LG 1	9 (2)	AG 1	no	
Imation	Trimax Fast	green	400	LG 1	9 (2)	AG 1	no	
Imation	Trimax G (Gradual)	green	200-400	LG 1	9 (2)	AG 1	no	
Imation	'Chest system' for GCA	uv + green	200	LG 1	9 (2)	AG 1	no	thorax
Imation	'Hi Energy' for GCA film	uv + green	400	LG 1	9 (2)	AG 1	no	thorax
Kiran	Lumax LG Fine	green	100	LG 1	9 (2)	AG 1	yes	
Kiran	Lumax LG Medium	green	200	LG 1	9 (2)	AG 1	yes	
Kiran	Lumax LG Regular	green	400	LG 1	9 (2)	AG 1	yes	
Kiran	Lumax LG Fast	green	800	LG 1	9 (2)	AG 1	yes	
Kiran	Lumax Par	blue	100	LG 4	7 (0)	AG 2	yes	
Kiran	Lumax Hi Speed	blue	200	LG 4	7 (0)	AG 2	yes	
Kiran	Lumax Hi Plus	blue	200	LG 4	7 (0)	AG 2	yes	
Kiran	Lumax LB Medium	uv/blue	200	LG 5	7 (0)	AG 1	yes	LG 5 tentative
Kiran	Lumax LB Regular	uv/blue	400	LG 5	7 (0)	AG 1	yes	LG 5 tentative
Kiran	Lumax LB Fast	uv/blue	800	LG 5	7 (0)	AG 1	yes	LG 5 tentative
Kodak	Lanex Fine	green	100	LG 1	9 (2)	AG 1	yes	
Kodak	Lanex Medium	green	200	LG 1	9 (2)	AG 1	yes	
Kodak	Lanex Regular	green	400	LG 1	9 (2)	AG 1	yes	
Kodak	Lanex Fast	green	800	LG 1	9 (2)	AG 1	yes	just 800
Kodak	InSight Thoracic	green	400	LG 1	9 (2)	AG 1	yes	thorax
Kodak	InSight HC Thoracic	green	400	LG 1	9 (2)	AG 1	yes	thorax
Kodak	InSight VHC Thoracic	green	400	LG 1	9 (2)	AG 1	yes	thorax
Kodak	InSight Ped. Ultra-	green	200	LG 1	9 (2)	AG 1	yes	pediatric thorax

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SCREEN		COLOUR	CLASS	GROUP	CURVE	RESOLUTION	IN MARKET	REMARK
	Detail							
Kodak	InSight Pediatric Detail	green	400	LG 1	9 (2)	AG 1	yes	pediatric thorax
Kodak	InSight Pediatric	green	800	LG 1	9 (2)	AG 1	yes	just 800; ped. th.
Kodak	InSight Skeletal Medium	green	200	LG 1	9 (2)	AG 3	yes	skeleton
Kodak	InSight Skeletal Regular	green	400	LG 1	9 (2)	AG 3	yes	skeleton
Kodak	X-Sight	green	400	LG 1	9 (2)	AG 3	yes	
Kodak	X-Omatic Fine	violet	50	LG 6	11 (5)	AG 1	no	
Kodak	X-Omatic Regular	violet	200	LG 6	11 (5)	AG 1	yes	
Kodak	X-Omatic Rapid	blue	400	LG 6	11 (5)	AG 1	no	
Kodak	X-Omatic Super Rapid	blue	800	LG 6	11 (5)	AG 1	no	
Konica	KF	green	100	LG 1	9 (2)	AG 1	yes	Konica Minolta
Konica	KM / KM II	green	200	LG 1	9 (2)	AG 1	yes	Konica Minolta
Konica	KR / KR II	green	400	LG 1	9 (2)	AG 1	yes	Konica Minolta
Konica	KS	green	800	LG 1	9 (2)	AG 1	yes	Konica Minolta
Konica	Gradual +/-	green	200-400	LG 1	9 (2)	AG 1	no	
Konica	Gradual +/-/+	green	200-400	LG 1	9 (2)	AG 1	no	
Konica	KF-Fine	green/blue	100	LG 1	9 (2)	AG 1	no	
Konica	KM-Medium	green/blue	200	LG 1	9 (2)	AG 1	no	
Konica	KR-Rapid	green/blue	400	LG 1	9 (2)	AG 1	no	
Konica	KS-High Speed	green/blue	400	LG 1	9 (2)	AG 1	no	
Konica	KM Gradual	green/blue	200-400	LG 1	9 (2)	AG 1	no	
Konica	KCH 2 +/-	green/blue	100-400	LG 1	9 (2)	AG 1	no	
Konica	KCH 3 +/-	green/blue	200-400	LG 1	9 (2)	AG 1	yes	Konica Minolta
Konica	KCU 3 +/-/+	green/blue	200-400	LG 1	9 (2)	AG 1	yes	Konica Minolta
Konica	ND-SR160	blue	100	LG 4	7 (0)	AG 2	yes	Konica Minolta
Konica	NH-SR250	blue	200	LG 4	7 (0)	AG 2	yes	Konica Minolta
Konica	NU	blue		LG 4	7 (0)	AG 2	no	
Konica	Gradual	blue		LG 4	7 (0)	AG 2	no	
Kyokko	GF-1	green	100	LG 1	9 (2)	AG 1	no	
Kyokko	GM-1	green	200	LG 1	9 (2)	AG 1	no	
Kyokko	GH-1	green	400	LG 1	9 (2)	AG 1	no	
Kyokko	GX-1	green	400	LG 1	9 (2)	AG 1	no	
Kyokko	Green Medium	green	200	LG 1	9 (2)	AG 1	yes	Kasei Optonix
Kyokko	Green Regular	green	400	LG 1	9 (2)	AG 1	yes	Kasei Optonix
Kyokko	Green Fast	green	800	LG 1	9 (2)	AG 1	yes	Kasei Optonix
Kyokko	FS	blue	50	LG 4	7 (0)	AG 2	no	
Kyokko	MS	blue	100	LG 4	7 (0)	AG 2	yes	Kasei Optonix
Kyokko	HS	blue	200	LG 4	7 (0)	AG 2	yes	Kasei Optonix
Kyokko	High Plus	blue	200	LG 4	7 (0)	AG 2	yes	Kasei Optonix
Kyokko	Super HS	blue	200	LG 4	7 (0)	AG 2	no	
Kyokko	Special	violet	400	LG 6	11 (5)	AG 1	no	
Kyokko	Super Special	violet	400	LG 6	11 (5)	AG 1	yes	Kasei Optonix
Kyokko	LF II	blue	50	LG 6	11 (5)	AG 1	no	
Kyokko	LT II	blue	100	LG 6	11 (5)	AG 1	no	
Kyokko	LH II	blue	200	LG 6	11 (5)	AG 1	no	
Kyokko	BF III	blue	50	LG 6	11 (5)	AG 1	no	
Kyokko	BM III	blue	100	LG 6	11 (5)	AG 1	no	
Kyokko	BH III	blue	200	LG 6	11 (5)	AG 1	no	
Kyokko	BX III	blue	400	LG 6	11 (5)	AG 1	no	

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SCREEN		COLOUR	CLASS	GROUP	CURVE	RESOLUTION	IN MARKET	REMARK
MCI Optonix	Rarex Extremity Green	green	50	LG 1	9 (2)	AG 1	yes	
MCI Optonix	Rarex Green Fine	green	100	LG 1	9 (2)	AG 1	yes	
MCI Optonix	Rarex Green Medium	green	200	LG 1	9 (2)	AG 1	yes	
MCI Optonix	Rarex Green Regular	green	400	LG 1	9 (2)	AG 1	yes	
MCI Optonix	Rarex Green Fast	green	800	LG 1	9 (2)	AG 1	yes	just 800
MCI Optonix	Optex Detail	blue	50	LG 4	7 (0)	AG 2	yes	
MCI Optonix	Optex Medium	blue	100	LG 4	7 (0)	AG 2	yes	
MCI Optonix	Optex High	blue	200	LG 4	7 (0)	AG 2	no	
MCI Optonix	Optex High Plus	blue	200	LG 4	7 (0)	AG 2	yes	
MCI Optonix	Optex L Plus	blue	200	LG 4	7 (0)	AG 2	no	autoradiography
MCI Optonix	Rarex Extremity Blue	blue	50	LG 4	7 (0)	AG 2	yes	
MCI Optonix	Rarex Blue Detail	blue	100	LG 6	11 (5)	AG 1	yes	
MCI Optonix	Rarex Blue Fast Detail	blue	400	LG 6	11 (5)	AG 2	yes	
MCI Optonix	Rarex Blue III	blue	800	LG 6	11 (5)	AG 1	yes	
Medical Index	MI-100 G	green	100	LG 1	9 (2)	AG 1	yes	
Medical Index	MI-200 G	green	200	LG 1	9 (2)	AG 1	yes	
Medical Index	MI-400 G	green	400	LG 1	9 (2)	AG 1	yes	
Medical Index	MI-800 G	green	800	LG 1	9 (2)	AG 1	yes	
Medical Index	MI-Fine	blue	50	LG 4	7 (0)	AG 2	yes	
Medical Index	MI-Medium	blue	100	LG 4	7 (0)	AG 2	yes	
Medical Index	MI-V	blue	200	LG 4	7 (0)	AG 2	yes	just 200
Medical Index	MI-VM	blue	200	LG 4	7 (0)	AG 2	yes	
Medical Index	MI-VP	blue	400	LG 4	7 (0)	AG 2	yes	just 400
Medical Index	MI 100	uv/blue	100	LG 5	7 (0)	AG 1	no	
Medical Index	MI 200	uv/blue	200	LG 5	7 (0)	AG 1	yes	
Medical Index	MI 400	uv/blue	400	LG 5	7 (0)	AG 1	yes	
Medical Index	MI 800	uv/blue	800	LG 5	7 (0)	AG 1	yes	
Medlink	MLG-Fine	green	100	LG 1	9 (2)	AG 1	yes	see MCI Optonix
Medlink	MLG-Medium	green	200	LG 1	9 (2)	AG 1	yes	see MCI Optonix
Medlink	MLG-Regular	green	400	LG 1	9 (2)	AG 1	yes	see MCI Optonix
Medlink	MLG-Fast	green	800	LG 1	9 (2)	AG 1	yes	just 800
Medlink	MLB-Detail	blue	50	LG 4	7 (0)	AG 2	yes	see MCI Optonix
Medlink	MLB-Medium	blue	100	LG 4	7 (0)	AG 2	yes	see MCI Optonix
Medlink	MLB-High Plus	blue	200	LG 4	7 (0)	AG 2	yes	see MCI Optonix
Medlink	MLB-Lplus	blue	200	LG 4	7 (0)	AG 2	yes	autoradiography
Medlink	MLH-Detail	blue	100	LG 6	11 (5)	AG 1	yes	see MCI Optonix
Medlink	MLH-Blue Fast Detail	blue	400	LG 6	11 (5)	AG 2	yes	see MCI Optonix
Medlink	MLH-III	blue	800	LG 6	11 (5)	AG 1	yes	see MCI Optonix
Okamoto	LDS	green	100	LG 1	9 (2)	AG 1	yes	
Okamoto	LMS	green	200	LG 1	9 (2)	AG 1	yes	
Okamoto	LUS	green	400	LG 1	9 (2)	AG 1	yes	
Okamoto	L-660	green	800	LG 1	9 (2)	AG 1	yes	just 800
Okamoto	LC Gradual	green	200-400	LG 1	9 (2)	AG 1	yes	
Okamoto	DD	blue	50	LG 4	7 (0)	AG 2	yes	
Okamoto	DMS	blue	100	LG 4	7 (0)	AG 2	yes	
Okamoto	DS	blue	200	LG 4	7 (0)	AG 2	yes	
Okamoto	KS	blue	400	LG 4	7 (0)	AG 2	yes	
Okamoto	EC Gradual	blue	100-200	LG 4	7 (0)	AG 2	yes	
Okamoto	Q-65	blue	400	LG 6	7 (0)	AG 1	yes	

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SCREEN		COLOUR	CLASS	GROUP	CURVE	RESOLUTION	IN MARKET	REMARK
Okamoto	Q-120	blue	800	LG 6	7 (0)	AG 1	yes	just 800
Rego	GR 100	green	100	LG 1	9 (2)	AG 1	yes	
Rego	GR 200	green	200	LG 1	9 (2)	AG 1	yes	
Rego	GR 400	green	400	LG 1	9 (2)	AG 1	yes	
Rego	GR 800	green	800	LG 1	9 (2)	AG 1	yes	
Rego	GR Gradual	green	200-400	LG 1	9 (2)	AG 1	yes	
Rego	Detail	blue	50	LG 4	7 (0)	AG 2	no	
Rego	Universal	blue	100	LG 4	7 (0)	AG 2	no	
Rego	Spezial 200	blue	200	LG 4	7 (0)	AG 2	yes	
Rego	Spezial Gradual	blue	100-200	LG 4	7 (0)	AG 2	no	
Rego	NP 400	uv/blue	400	LG 5	7 (0)	AG 1	yes	
Rego	NP 800	uv/blue	800	LG 5	7 (0)	AG 1	yes	
Rego	NP Gradual	uv/blue	200-800	LG 5	7 (0)	AG 1	yes	
Rego	NPU	violet	200	LG 6	11 (5)	AG 1	no	
Rego	NPR	violet	400	LG 6	11 (5)	AG 1	no	
Rego	NP 400 (old)	violet	400	LG 6	11 (5)	AG 1	no	
Rego	NP Gradual (old)	violet	200-400	LG 6	11 (5)	AG 1	no	
RMXC Intex	Rarex Green Fine	green	100	LG 1	9 (2)	AG 1	yes	see MCI Optonix
RMXC Intex	Rarex Green Medium	green	200	LG 1	9 (2)	AG 1	yes	see MCI Optonix
RMXC Intex	Rarex Green Regular	green	400	LG 1	9 (2)	AG 1	yes	see MCI Optonix
RMXC Intex	Rarex Green Fast	green	800	LG 1	9 (2)	AG 1	yes	just 800
RMXC Intex	Optex Detail	blue	50	LG 4	7 (0)	AG 2	yes	see MCI Optonix
RMXC Intex	Optex Medium	blue	100	LG 4	7 (0)	AG 2	yes	see MCI Optonix
RMXC Intex	Optex High Plus	blue	200	LG 4	7 (0)	AG 2	yes	see MCI Optonix
RMXC Intex	Rarex Blue Detail	blue	100	LG 6	11 (5)	AG 1	yes	see MCI Optonix
RMXC Intex	Rarex Blue Fast Detail	blue	400	LG 6	11 (5)	AG 2	yes	see MCI Optonix
RMXC Intex	Rarex Blue III	blue	800	LG 6	11 (5)	AG 1	yes	see MCI Optonix
RMXC Intex	Rarex Blue Rapid	blue	800	LG 6	11 (5)	AG 1	yes	
Sterling	Cronex Quanta 5	green	400	LG 1	9 (2)	AG 1	no	formerly DuPont
Sterling	Cronex Ortho Fine	green	100	LG 1	9 (2)	AG 1	no	formerly DuPont
Sterling	Cronex Ortho Medium	green	200	LG 1	9 (2)	AG 1	no	formerly DuPont
Sterling	Cronex Ortho Regular	green	400	LG 1	9 (2)	AG 1	no	formerly DuPont
Sterling	Cronex Detail	blue	25	LG 4	7 (0)	AG 2	no	formerly DuPont
Sterling	Cronex Fast Detail	blue	50	LG 4	7 (0)	AG 2	no	formerly DuPont
Sterling	Cronex Par Speed	blue	100	LG 4	7 (0)	AG 2	no	formerly DuPont
Sterling	Cronex Hi Plus	blue	200	LG 4	7 (0)	AG 2	no	formerly DuPont
Sterling	Cronex Lightning Plus	blue	200	LG 4	7 (0)	AG 2	no	formerly DuPont
Sterling	Cronex SP	blue		LG 4	7 (0)	AG 2	no	formerly DuPont
Sterling	Cronex Gradient	blue	100-200	LG 4	7 (0)	AG 2	no	formerly DuPont
Sterling	Ultravision Detail	ultraviolet	100	LG 5	7 (0)	AG 3	no	see Agfa-Gevaert
Sterling	Ultravision Fast Detail	ultraviolet	200	LG 5	7 (0)	AG 3	no	see Agfa-Gevaert
Sterling	Ultravision Rapid	ultraviolet	400	LG 5	7 (0)	AG 3	no	see Agfa-Gevaert
Sterling	Ultravision Super Rapid	ultraviolet	800	LG 5	7 (0)	AG 3	no	see Agfa-Gevaert
Sterling	Ultravision EL	ultraviolet	800	LG 5	7 (0)	AG 3	no	see Agfa-Gevaert
Sterling	Quanta Detail	blue/uv	100	LG 5	7 (0)	AG 3	no	also Agfa-Gevaert
Sterling	Quanta Fast Detail	violet	400	LG 5	7 (0)	AG 3	no	also Agfa-Gevaert
Sterling	High Speed	violet		LG 6	11 (5)	AG 1	no	
Sterling	Cronex Quanta 2	violet	400	LG 6	11 (5)	AG 1	no	
Sterling	Quanta Super Rapid	blue	800	LG 6	11 (5)	AG 1	no	also Agfa-Gevaert

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SCREEN		COLOUR	CLASS	GROUP	CURVE	RESOLUTION	IN MARKET	REMARK
Sterling	Cronex Quanta 3	blue	800	LG 6	11 (5)	AG 1	no	
Sterling	Quanta 3 Gradient	blue	200-400	LG 6	11 (5)	AG 1	no	
Sterling	Quanta Rapid	violet	800	LG 6	11 (5)	AG 1	no	also Agfa-Gevaert
Typon	GG 1	green	100	LG 1	9 (2)	AG 1	no	
Typon	GG 2	green	200	LG 1	9 (2)	AG 1	no	
Typon	GG 4	green	400	LG 1	9 (2)	AG 1	no	
Typon	GG 5	green	400	LG 1	9 (2)	AG 1	no	
Typon	OG 100	green	100	LG 1	9 (2)	AG 1	no	
Typon	OG 200	green	200	LG 1	9 (2)	AG 1	no	
Typon	OG 400	green	400	LG 1	9 (2)	AG 1	no	
Typon	OG 800	green	400	LG 1	9 (2)	AG 1	no	
Typon	OG Gradual	green	200-400	LG 1	9 (2)	AG 1	no	
Typon	Contatyp LMS 200	green	200	LG 1	9 (2)	AG 1	no	
Typon	Contatyp LUS 400	green	400	LG 1	9 (2)	AG 1	no	
Typon	Fin	blue	50	LG 4	7 (0)	AG 2	no	
Typon	Universal	blue	100	LG 4	7 (0)	AG 2	no	
Typon	Special	blue	200	LG 4	7 (0)	AG 2	no	
Typon	Gradual	blue	100-200	LG 4	7 (0)	AG 2	no	
Typon	SE 1	blue	100	LG 6	11 (5)	AG 1	no	
Typon	SE 2	blue	200	LG 6	11 (5)	AG 1	no	
Typon	SE 4	blue	400	LG 6	11 (5)	AG 1	no	
Typon	SE 8	blue	400	LG 6	11 (5)	AG 1	no	
Typon	SE Gradual	blue	200-400	LG 6	11 (5)	AG 1	no	
Typon	SE 200	blue	200	LG 6	11 (5)	AG 1	no	LG 6 tentative
Typon	SE 400	blue	400	LG 6	11 (5)	AG 1	no	LG 6 tentative
Typon	SE 800	blue	800	LG 6	11 (5)	AG 1	no	LG 6 tentative
Typon	SE Gradual	blue	200-800	LG 6	11 (5)	AG 1	no	LG 6 tentative
Valmex	Valmex SE 100	green/blue	100	LG 2	9 (2)	AG 1	no	
Valmex	Valmex SE 200	green/blue	200	LG 2	9 (2)	AG 1	no	
Valmex	Valmex SE 400	green/blue	400	LG 2	9 (2)	AG 1	no	
Valmex	Valmex SE 400	green/blue	400	LG 2	9 (2)	AG 1	no	
Valmex	Valmex SE 400	green/blue	400	LG 2	9 (2)	AG 1	no	
Valmex	Valmex SE 400	green/blue	400	LG 2	9 (2)	AG 1	no	
Valmex	Valmex SE 200 G	green/blue	200	LG 2	9 (2)	AG 1	yes	
Valmex	Valmex SE 400 G	green/blue	400	LG 2	9 (2)	AG 1	yes	
Valmex	Valmex SE 200 B	uv/blue	200	LG 5	7 (0)	AG 1	yes	
Valmex	Valmex SE 400 B	uv/blue	400	LG 5	7 (0)	AG 1	yes	

Table 3.2.

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3.3. Imaging plates for computed radiography

IMAGING PLATE		COLOUR	GROUP	CURVE	IN MARKET	REMARK
Agfa-Gevaert	ADC MD10	blue	LG 6	11 (5)	no	Agfa-Gevaert product
Agfa-Gevaert	ADC MD30	blue	LG 6	11 (5)	no	Agfa-Gevaert product
Agfa-Gevaert	ADC MD40	blue	LG 6	11 (5)	no	Agfa-Gevaert product
Agfa-Gevaert	CR MD4.0	blue	LG 6	11 (5)	yes	Agfa-Gevaert product
Agfa-Gevaert	CR MM3.0	blue	LG 6	11 (5)	yes	Agfa-Gevaert mammo
Agfa-Gevaert	CR MM2.0	blue	LG 6	11 (5)	yes	Agfa-Gevaert mammo
CAWO	Digit	blue	LG 6	11 (5)	yes	CAWO product
Fuji	Fuji Imaging Plate ST-V	blue	LG 6	11 (5)	no	Fuji product
Fuji	Fuji Imaging Plate ST-VI	blue	LG 6	11 (5)	yes	Fuji product
Fuji	Fuji Imaging Plate HR-V	blue	LG 6	11 (5)	yes	Fuji product
Fuji	Fuji Imaging Plate ST-BD	blue	LG 6	11 (5)	yes	Fuji dual reading
Fuji	Fuji Imaging Plate HR-BD	blue	LG 6	11 (5)	yes	dual reading mammo
Kodak	Ektascan GP (old)	blue	LG 6	11 (5)	no	Kodak product
Kodak	Ektascan GP (or GP-25)	blue	LG 6	11 (5)	no	Kodak product
Kodak	Ektascan HR (or HD)	blue	LG 6	11 (5)	no	Kodak product
Kodak	ACR	blue	LG 6	11 (5)	yes	Kodak product
Kodak	DirectView CR 500	blue	LG 6	11 (5)	yes	Kodak product
Konica Minolta	Regius RP-1S	blue	LG 6	11 (5)	yes	Konica Minolta product
Konica Minolta	Regius RP-6M	blue	LG 6	11 (5)	yes	Konica Minolta mammo
Philips	Fuji Imaging Plate ST-V	blue	LG 6	11 (5)	no	Fuji product
Philips	Fuji Imaging Plate ST-VI	blue	LG 6	11 (5)	yes	Fuji product
Philips	Fuji Imaging Plate HR	blue	LG 6	11 (5)	yes	Fuji product
Philips	Fuji Imaging Plate ST-BD	blue	LG 6	11 (5)	yes	Fuji dual reading
Philips	Fuji Imaging Plate HR-BD	blue	LG 6	11 (5)	yes	dual reading mammo

Table 3.3.

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3.4. Speed classes and corresponding dose steps for CM/CP generators

Speed class SC		DOSE STEPS for curve						
S	**Dose* [µGy]**	**0/7**	**1/8**	**2/3**	**4**	**5/11**	**6/9/10**	**12**
40 : **50** : 71	25 : **20** : 14.1	28	30	32	36	33	31	29
80 : **100** : 140	12.5 : **10** : 7.1	22	24	26	30	27	25	23
160 : **200** : 280	6.3 : **5** : 3.6	16	18	20	24	21	19	17
320 : **400** : 560	3.1 : **2.5** : 1.8	10	12	14	18	15	13	11
630 : **800** : 1100	1.6 : **1.25** : 0.9	4	6	8	12	9	7	5
1250 : **1600** : 2200	0.8 : **0.625** : 0.45	0	0	2	6	3	2	0

*) Image receptor dose for an optical film density of D_{min} + 1,0. As darker films are required in practice, dose values are usually higher (corresponding to 2 or 3 additional dose steps in many cases). Typical dose values for the speed class SC = 400, e.g., are in the range of 3 µGy to 4 µGy.

Table 3.4.

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4. Explanations

4.1. Explanations on film table

- COLOUR: The colour of screen light the film is designed for. Crossover combinations, such as green sensitive film with blue-emitting screen, will lead to increased dose and shall therefore be avoided.

- FACTOR: By multiplication of this film factor and the screen class, a rough estimation of the system speed S is possible, provided that the film is designed for the screen light colour.

- $\overline{G}$: Parameter, giving the slope of the straight line joining two specified points on a sensitometric curve. The average gradient mainly depends on the film and its processing. It refers to X-ray exposure of the screen-film combination and cannot generally be measured by light sensitometry.

- D_{min}: The minimum optical density for optimized fresh (“fr“) and stabilized (“st“) processing conditions. D_{min} is the optical density of a film which is not exposed but processed.

- LE, LK: Reference values for quality control of film processing, according to the German pre-standard DIN V 6868-55.
  LE is the light sensitivity (“Lichtempfindlichkeit“), and LK is the light contrast (“Lichtkontrast“). These values are given for optimized film processing conditions with fresh (“fr“) or stabilized (“st“) chemicals.
  Dedicated testing based on DIN V 6868-55 requires specially calibrated light sensitometers and certified films. LE and LK do not allow any direct conclusion on the X-ray imaging properties or on the quality of the films. Whenever two values are given both for LE and LK then this film has two different emulsions on front and back. In these cases, the first value refers to the front side emulsion.

- REMARK: In this column you find hints on
  – dedicated applications (e.g. thorax)
  – identical or comparable film types,
  – special film processing,
  – product changes.

4.2. Explanations on screen table and imaging plate table

Not all data in Tables 3.2. and 3.3 are manufacturer data although all available manufacturer information has been taken into account. All values in Table 3.2 refer to orderly performing pairs of intensifying screens.

- COLOUR: Colour of the light preferably emitted by the screen or imaging plate.

- CLASS: Values in this column refer to the rounded system speed which can be obtained in combination with standard films at approximately 70 kV, provided that the film is designed for the screen light colour. For screens designed for dedicated applications, the class is given for typical application conditions (e.g. thorax: tube voltage > 100 kV).

- GROUP: Data for programming the high-voltage generator for the kV characteristics of the screen or imaging plate. Values in this column apply to OPTIMUS 50/65/80 and VELARA R/F generators.

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- CURVE: Data for programming the high-voltage generator for the kV characteristics of the screen or imaging plate. Values in this column apply to:

  – SUPER 50/80/100 CM
  – MAXIMUS 80/100/120 CM
  – MEDIO 30/50 CP
  – MEDIO 50/65 CP-H
  – SUPER 50/80/100 CP

  Depending on the type of generator and the software release, curves 0...6 or curves 0...11 can be programmed. Curves 7...11 are improved curves which should be preferred. They are available with SCP Rel. ≥ 8.

- RESOLUTION: Values needed for identification of reference values for high contrast resolution, both for screen-film image receptors and for complete radiographic systems using screen-film image receptors. The corresponding image quality test procedures are described in the IP Manual RAD (4512 984 07212).

- IN MARKET: As intensifying screens may be used for a very long time, Table 3.2. even includes screens which were taken out of the market many years ago. Imaging plates which were taken out of the market some time ago may still be listed in Table 3.3.

- REMARK: In this column you find information like

  – dedicated applications (e.g. thorax),
  – product properties,
  – manufacturer,
  – product age.

4.3. Explanations on dose-step table for CM/CP generators

- Speed class SC: Speed classes of screen-film systems.
  Stated classes and ranges follow the standardized classification (DIN 6867-10).

- DOSE: Corresponding dose in [µGy]; following the formula: 1000µGy/S.
  Values published by the manufacturers are supposed to refer to clinical conditions.
  Determination of image receptor dose by measurement using a technical set-up
  (e.g. 25 mm Al at the tube, simulating a patient) may give deviating results (up to 30%).

- DOSE STEP: Basic dose step, depending on the CALCULATED SPEED CLASS of the screen-film system or the intended speed class for the imaging plate, respectively. For screen-film systems, this dose step stands for an optical density of approximately “minimum optical density D_{min} plus 1“.

  Addition of 1 dose step represents an addition of 12.2% dose ($10^{0,05} = 1,1220$).
  Addition of 6 dose steps means doubling the dose ($10^{0,3} = 1,9953$).

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5. Final remarks

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If you have relevant information available which is not yet included in the tables then please send this to Dr. Herbert Schröder. It will be included in future updates.

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